



WMSC Commissioner Brief: W-0052 – Improper Roadway Worker Protection at East Falls Church Station – August 19, 2020

Prepared for Washington Metrorail Safety Commission meeting on November 10, 2020

Safety event summary:

The operator of an outbound Silver Line train toward Wiehle-Reston East Station did not stop the train at the East Falls Church Station platform for an Advance Mobile Flagger (AMF). The Train Operator briefly moved the master controller to B5 braking mode before the train exited the platform limits, but then returned to coast and power positions for a considerable distance. When the train did not stop at the platform for the AMF, the AMF immediately reported the emergency over the radio, and a ROCC controller then contacted the Train Operator.

Eventually, the Train Operator returned to B5 braking mode, and the train stopped when the lead car was 2,919 feet beyond the end of the platform. The ROCC Controller then allowed the Train Operator to continue on without requiring any contact with the Roadway Worker In Charge.

At the time of this event, East Falls Church Station was closed to customers due to a months-long platform construction project, and trains were continuing through the station without stopping.

Forward facing video shows that construction on the platform, sunlight and other factors made it impossible for the train operator to see the AMF until the front of train was about two-thirds of the way through the station.

The Train Operator entered the station at a speed of 33.26 mph, above the designated 25 mph speed for trains that are bypassing a station. The Train Operator applied brakes when the lead car was 420 feet into the platform limits and the train was moving 31.78 mph. When the train reached the end of the 600-foot platform, it was travelling 20.98 mph.

ROCC controllers had made only one blanket radio announcement approximately 37 minutes before this event regarding this work crew entering the roadway from McLean Station to the K98 junction, which did not include any specific reminder to stop at East Falls Church Station.

Probable Cause:

Metrorail established that a number of stations would be bypassed long-term due to construction or the public health emergency without adequately mitigating risks introduced by such changes and construction, including risks related to the AMF method of roadway worker protection.

Corrective Actions:

A Lessons Learned document was developed and distributed regarding train speeds within stations and the importance of following AMF procedures.

The Train Operator involved in this event also underwent refresher training on rules and procedures.



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WMSC staff observations:

This event demonstrates the importance of a complete safety management system (SMS) approach. All potential hazards must be identified, mitigated and addressed appropriately, and the consideration of such potential hazards must be factored into all decisions.

WMSC staff recommendation: Adopt final report.



Washington Metro Area Transit Authority

Department of Safety and Environmental

Management (SAFE)

FINAL REPORT OF INVESTIGATION A&I E20307

Date of Event:	8/19/2020
Type of Event:	Improper Roadway Worker Protection
Incident Time:	12:15 hrs.
Location:	East Falls Church Station, Track 2
Time and How received by SAFE:	12:25 hrs., On-Call SAFE Phone
WMSC Notification Time:	14:11 hrs.
Rail Vehicle:	Train ID 611, 7K 8-Car Consist Lead Car 7078
Injuries:	No
Damage:	No

East Falls Church Station – Improper Roadway Worker Protection August 19, 2020 TABLE OF CONTENTS

1. Abbreviations and Acronyms -----	Page 3
2. Executive Summary-----	Page 4
3. Incident Site -----	Page 6
4. Field Sketch/Diagram-----	Page 6
5. Purpose and Scope -----	Page 6
6. Investigation Process and Methods -----	Page 6
7. Investigative Methods-----	Page 6
8. Investigation-----	Page 7
A. Chronological Timeline of Events-----	Page 12
B. Rail Operations Control Center SPOTS event log data -----	Page 15
C. Closed Circuit Television-----	Page 15
D. Office of Vehicle Program Services-----	Page 15
E. Advanced Information Management System playback-----	Page 17
F. Communication Maintenance-----	Page 19
G. Appendix B Interview Findings-----	Page 19
9. Immediate Mitigation-----	Page 20
10. Findings-----	Page 20
11. Weather-----	Page 21
12. Human Factors-----	Page 21
13. Probable Cause-----	Page 22
14. Recommendations -----	Page 23
15. Appendices-----	Page 24
A. RTRA Lessons Learned Notice-----	Page 24
B. Interviews-----	Page 25

Abbreviations and Acronyms

AIMS	Advanced Information Management System
AMF	Advanced Mobile Flagger
ARS	Audio Recording System
CCTV	Closed Circuit Television
CENV	Vehicle Program Services
CMNT	Office of Car Maintenance
COMM	Office of Communications Maintenance
FT	Foul Time
MSRPH	Metrorail Safety Rules and Procedures Handbook
NOAA	National Oceanic Atmospheric Administration
NVR	Network Video Recorder
OJT	On-the-Job Training
ROCC	Rail Operations Control Center
RTC	Rail Traffic controller
RTRA	Office of Rail Transportation
RWIC	Roadway Worker in Charge
RWP	Roadway Worker Protection
SAFE	Department of Safety and Environmental Management
TRST	Office of Track and Structures
VMDS	Vehicle Monitor and Diagnostic System
WMATA	Washington Metropolitan Area Transit Authority

Executive Summary

On Wednesday, August 19, 2020, at approximately 12:15 hrs., a West Falls Church Division Train Operator, operating [Silver Line] Train ID 611 in the direction of Wiehle Reston Station, entered East Falls Church Station, Track 2 platform limits [currently closed for Platform Improvement Project] and did not come to a complete stop at the platform 8-car marker to receive verbal face-to-face instructions from the Advanced Mobile Flagger (AMF) that a Mobile Work Crew was wayside performing a track inspection between Mclean and East Falls Church Stations.

The AMF notified the Rail Operations Control Center (ROCC) Radio Rail Traffic Controller (RTC) via radio and stated, "Emergency, Emergency, Emergency, a train just failed to stop at my location." The ROCC Radio RTC contacted the Train Operator of Train ID 611 to ascertain what occurred. The Train Operator responded to ROC Radio RTC and stated, "I assumed the AMF was a construction worker and did not stop." The Work Mobile Crew was instructed to stand in a place of safety and await a train pickup. The Train Operator was subsequently removed from service for post-incident toxicology testing. The train consist was removed service for post-incident inspection. Based on Vehicle Program Services (CENV) and the Office of Car Maintenance (CMNT), there were no anomalies with the railcar.

The probable cause of the incident was that Metrorail established a certain number of stations would be bypassed long-term due to construction without adequately mitigating risks introduced by such changes and construction, including risks related to the AMF method of Roadway Worker Protection. Train ID 611 entered the platform limits above approved regulated speeds [more than 25 mph] while "dead heading" through East Falls Church Station, subsequently failing to receive AMF face-to-face communication processes outlined in the Metrorail Safety Rules and Procedures Handbook (MSRPH). The Train Operator was not in compliance with their job responsibilities and duties outlined in the MSRPH listed below:

GR 1.46 – Employees shall not permit any other action or condition of mind to divert their attention from the safe and efficient performance of duty.

OR 3.18 – Employees shall not operate any vehicle in a reckless or unsafe manner.

OR 3.71 – Rail Vehicle operators shall stop their vehicles immediately when observing anyone violently waving any object on or near the track.

OR 3.82 - Employees shall not operate rail vehicles at speeds higher than the maximum authorized speed maximum speed for trains passing through the station without stopping is 25 mph (dead head speed).

MSRPH RWP 5.13.6.1 - As the Rail Vehicle Operator approaches an AMF, all Rail Vehicle Operators MUST come to a COMPLETE STOP at the end of the station platform eight (8) car marker or end gate area. (The Train Operator traversed through East Falls Church Station while an Advance Mobile Flagger was present without stopping)

MSRPH RWP 5.13.6.2 - The Rail Vehicle Operator will be given face-to-face verbal instructions regarding working crews on the tracks."

Additionally, due to East Falls Church Platform Improvement Project, Closed Circuit Television (CCTV) was inoperative and not available. Additionally, environmental conditions of the platform, i.e., construction cones, construction workers with comparable safety vest as the Advance Mobile Flagger, and poor platform lighting indirectly contributed to this event.

Adherence to written procedures and processes within the MSRPH and platform environmental conditions were identified as contributing factors in this event.

As a result of this investigation, SAFE makes the following safety recommendations:

For ROCC to develop a Temporary Order for scheduled Platform Improvement Projects where trains must bypass a station, e.g., ROCC will "un-fleet" the signals [remove automatic] associated with AMF duties at a respective 8-car marker location in a construction area. ROCC will then provide the Train Operator a permissive block to the operating signal to receive instructions from the AMF. Once briefed, the ROCC will confirm the AMF communication with Train Operator and provide a lunar signal to the Train

For RTRA to enhance On-the-Job Training (OJT) and ride check process and provide the Train Operator with refresher training on performance requirements to identify opportunities for improvements.

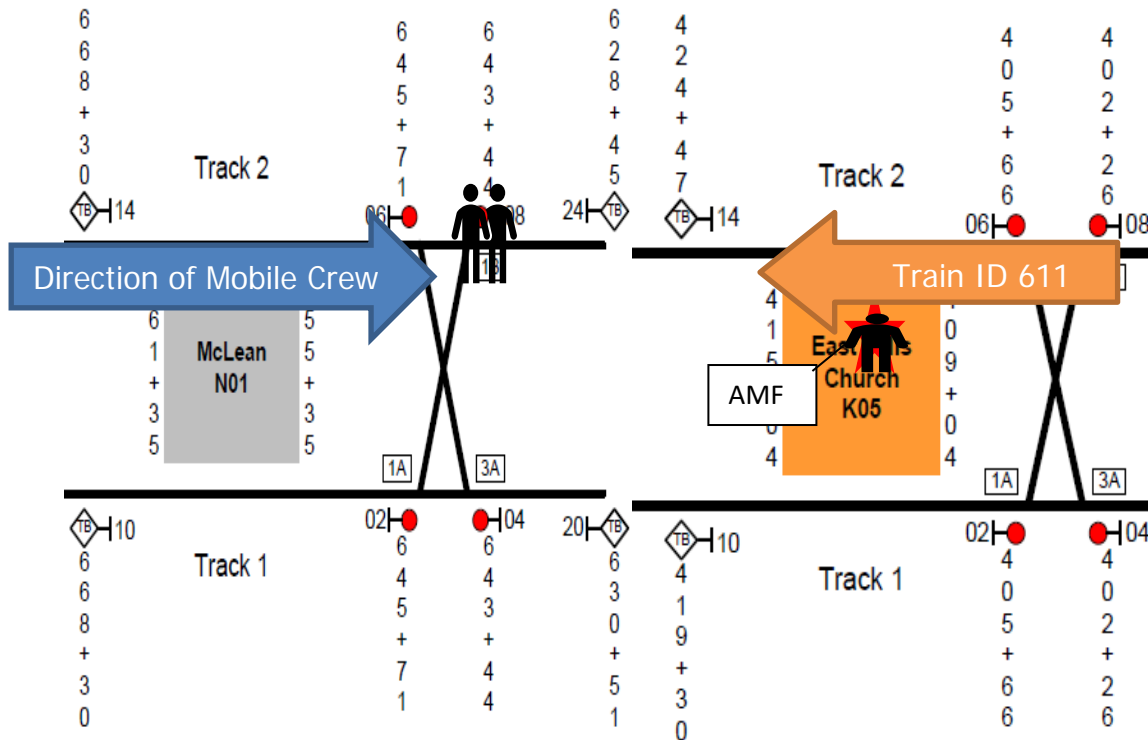
For RTRA to develop a Lessons Learned with an emphasis on Train Operator's executing their job responsibilities and duties outlined in the MSRPH regarding entering the platform limits within approved regulated speeds and performing face-to-face communication processes with the AMF prior to proceeding to the next station.

For RTRA to contact the training department so that the Train Operator can receive refresher training. Refresher training will be on rules and procedures regarding compliance with the AMF, RWP, and maximum authorized speed of 25 mph when traveling through a station procedure.

Incident Site

East Falls Church Station, Track 2 Chain Marker (CM) K2-415+04

Field Sketch/Schematics



Purpose and Scope

The purpose of this incident investigation and candid self-evaluation is to collect and analyze available facts, determine the probable cause(s) of the incident, identify contributing factors, and make recommendations to prevent a recurrence.

Investigation Process and Methods

Upon receiving notification of the Improper Roadway Worker Protection violation at East Falls Church Station, Track 2, on August 19, 2020, SAFE initiated the subsequent investigation.

Investigative Methods

The investigative methodologies included the following:

- Formal Interviews:
 - Train Operator
 - Roadway Worker in Charge (RWIC): Track and Structures

- AMF
- TRST Inspector
- Documentation Review - Collection of relevant work history information and process documentation contained in WMATA systems of records. These records include:
 - MSRPH
 - ROCC hourly announcement log and daily radio check log data review
 - National Oceanic Atmospheric Administration (NOAA)
- System Data Recording Review - Collection of information contained in Metro Data Recording Systems. This data includes:
 - Automated Information Management System (AIMS) playback
 - Audio Recording System (ARS) playback (Radio/Phone communication)
 - ROCC SPOTS event log data review
 - CMNT post-incident inspection data review
 - CENV post-incident analysis data review
 - Network Video Recording (NVR) review (Car-borne Forward-Facing video)
 - Systems Maintenance Department radio communication system data review

Based on a review of the Audio Recording System (ARS) playback, AIMS event log and the ROCC SPOTS data, Forward-Facing video, and CENV post-incident analysis; data revealed the following information:

Based on a review of the ARS, OPS 2 [Silver Line], the Roadway Worker in Charge (RWIC) contacted the ROCC and established positive communication. The RWIC was granted permission to go direct with the AMF to ensure the AMF was in position at East Falls Church Station, Track 2, 8-car marker. Note: The AMF is positioned at the Station before/ahead of the Mobile Work Crews starting location. The Mobile Work Crew is walking against traffic in the direction of the AMF positioned on that respective track. The AMF confirmed being in position and ready for AMF operations.

The ROCC Radio RTC then granted permission for the Mobile Work Crew to enter the roadway to start their inspection from McLean Station towards East Falls Church Station, Track 2, under AMF protection. After permission was granted for the Mobile Work Crew to start their inspection, the Radio RTC made periodic announcements over the radio, stating to Ops 2 Operators that a Mobile Work Crew will be walking within their route and gave instructions to depart East Falls Church Station after speaking with the AMF.

At approximately 12:15 hrs., the AMF responded over Ops 2 radio, "Emergency, Emergency, Emergency," Train ID 611 did not come to a complete stop at the end of East Falls Church Station, Track 2 platform 8-car marker to receive verbal face-to-face

instructions. The Radio RTC immediately acknowledged the transmission and asked Train ID 611 if they received instruction from the AMF. The Train Operator responded that they did not communicate to the AMF and that they did not notice the AMF until the consist was beyond the 8-car marker of East Falls Church Station, Track 2. The Radio RTC responded and instructed Train ID 611 Train Operator to continue and notified the Mobile Work Crew on the roadway to stand by stand clear.

CENV personnel performed an analysis on the affected consist and reported the speed of the train entering East Fall Church Station platform was 33 mph and when the consist was 420 feet within East Falls Church Station platform limits, the consist speed was 31.78 mph. Based on data evidence captured from Vehicles Program Services, at no time did the consist come to a complete stop within the platform or after passing East Falls Church Station platform limits.

Car-borne Network Video Recording Forward-Facing video revealed the following:

Train ID 611 entering platform limits currently under Platform Improvement Project with construction personnel and equipment on the platform.



Forward-Facing video shows limited lighting through the platform limits.



Approximately 125 feet away from the end of the platform limits, Forward-Facing video shows an increase in lighting conditions [sun glare] with no visible person at the 8-car marker.



Approximately 80 feet from the 8-car marker, the AMF appears in the line of sight of the Forward-Facing video. Note: At this time, the train is traveling at approximately 31.78 mph.



The AMF positioned at the 8-car marker with designated safety equipment and devices set up waving a rolled-up orange flag as the consist passed.



Safety equipment highlighted below:



The ROCC SPOTS data showed the head arrived and cleared East Falls Church Station without stopping. The consist came to a complete stop 2,919 feet beyond the 8-car marker of East Falls Church Station, Track 2. At 12:16:25 hrs., the consist continued on towards McLean Station and activated the horn and continued doing so up to 11,902.4 feet beyond East Falls Church Station platform. Forward-Facing video and data analysis showed the consist passed the Mobile Work Crew at a speed of 15.73 mph.

During a SAFE interview, the Train Operator stated they were on break during the time the Radio RTC announced that there was a Mobile Work Crew within their train route. However, ARS playback revealed that the Radio RTC made periodic announcements after the time period the Train Operator stated being on break.

RTRA removed the Train Operator from service for post-incident testing. The affected consist was also removed from service for a post-incident inspection.

There was no data to support any anomalies with the consist. ARS playback review revealed there did not appear to be any communication deficiencies over the radio. There were no injuries or damages reported as a result of this incident.

Chronological Event Timeline

Based on radio and phone ARS playback, the following information was revealed:

Time	Description
10:45:05 hrs.	RWIC notified ROCC Radio RTC that RWIC is requesting to enter the roadway to conduct a track inspection from Spring Hill Station to K98 Junction while under AMF protection with one track inspector in the mobile crew. RWIC stated there are two total AMF in the crew, one at 8-car marker Greensboro Station and the other one at Tysons Corner Station, Track 2.
10:45:40 hrs.	Radio RTC acknowledged and stated, "the ROCC copies your request to enter the roadway Track 2 to perform a walking track inspection from Spring Hill Station to K98." Radio RTC then stated, "did you identify your hotspots, and did you conduct a safety briefing, over?" RWIC responded, "that's affirmative."
10:45:55 hrs.	The Radio RTC responded, "I copy RWIC that you have identified hotspots and conducted safety briefing, you will use AMF as your protection and you have two AMF in place, go direct with them at this time, over."
10:46:05 hrs.	RWIC acknowledged and asked the AMF at Greensboro Station, "are you in place?" AMF responded, "I am in place and ready to flag." RWIC acknowledged, then stated, "ROCC, the AMF is in place; how do you copy?"
10:46:20 hrs.	The Radio RTC responded, "that's affirmative."
10:46:42 hrs.	The Radio RTC then stated "RWIC you have confirmed you've identified hotspots, conducted safety briefings and using AMF as your protection and you have your AMF in place Track 2, Greensboro Station, you now have permission to begin your walk to conduct a track inspection." The Radio RTC stated, "please be vigilant of movement and protect yourself at all times, let ROCC know when you clear the roadway and change locations."

10:47:05 hrs.	RWIC acknowledged and stated, "you gave me permission to enter the roadway and start my inspection; I will notify you when clear of the roadway, trains are moving in all directions and the third rail is hot and energized, AMF at Greensboro Station, Track 2 and can start AMF operations."
10:47:12 hrs.	The Radio RTC acknowledged and stated, "attention all Silver Line Operators, be on the lookout, we now have a mobile crew walking between Spring Hill Station and Greensboro Station, Track 2. Upon seeing the mobile crew, please sound your horn and dim your lights and do not exceed 15 mph."
10:59:15 hrs.	The Radio RTC made an announcement for a personnel roadway update to all Blue, Orange and Silver OPS 2. The Radio RTC stated, "we have Track department walking on Track 2, from Spring Hill Station to Greensboro Station. Upon seeing the mobile crew please sound your horn and dim your lights and do not exceed 15 mph."
11:01:57 hrs.	RWIC notified ROCC Radio RTC that the Mobile Work Crew cleared the roadway and was safely on the Greensboro Station platform and would like to continue the walk to conduct an inspection to Tysons Corner Station, Track 2 and will be requesting FT from Tysons Corner Station to Chain Marker (CM) N2-729+00.
11:02:19 hrs.	The Radio RTC acknowledged and stated, "standby and stand clear but while holding on the platform go direct with your AMF." RWIC acknowledged and stated, "AMF, are you in place?" AMF responded, "I am in place at Tysons Corner Station, Track 2, ready to flag."
11:04:58 hrs.	The Radio RTC stated, "RWIC at this time Signal N01-08 is red, over." RWIC acknowledged. The Radio RTC responded, "prohibited exits blue block human form in place at this time. You have permission for FT. Advise the ROCC when you relinquish your FT, over." RWIC acknowledged. The assigned AMF acknowledged as well.
11:17:09 hrs.	The RWIC notified ROCC Radio RTC that the Mobile Work Crew cleared the roadway and is relinquishing FT. The Mobile Work Crew is safely on the Tysons Corner Station platform and would like to continue walking to conduct an inspection to McLean Station, Track 2." The

	Radio RTC acknowledged and advised the RWIC to go direct with the AMF. RWIC confirmed the AMF was in place. The Radio RTC acknowledged and gave the RWIC permission to enter the roadway and continue the inspection.
11:38:40 hrs.	RWIC notified ROCC Radio RTC that the Mobile Work Crew cleared the roadway and was safely on the McLean Station platform and would like to continue their walk to conduct an inspection to K98 Junction, Track 2.
11:38:40 hrs.	The Radio RTC responded, "attention all operators, please be advised we now have personnel walking from McLean Station to K98 Junction. Depart East Falls Church Station after speaking with the AMF. Upon seeing the mobile crew, please sound your horn and dim your lights and do not exceed 15 mph."
11:47:05 hrs.	RWIC acknowledged and stated, "AMF, are you in place?" AMF responded, "I am in place at East Falls Church Station, Track 2 and ready to flag." RWIC acknowledged and stated, "ROCC, the AMF is in place." The Radio RTC responded, "at this time, you can continue your walk."
12:15:40 hrs.	AMF announced over OPS 2 radio, "Emergency, Emergency, Emergency a train just blew past my location at East Falls Church Station, Track 2 going to McLean Station, over."
12:15:52 hrs.	The Radio RTC responded, "the unit that called emergency, try again and identify yourself, over." The AMF responded, "I am at East Falls Church Station, Track 2, a train just blew past my location, did not stop, I had the flag out, the train is heading towards McLean Station." The Radio RTC responded, "Train ID 611 contact ROCC."
12:16:23 hrs.	Train ID 611 responded, "go ROCC." The Radio RTC responded, "did you talk to the AMF at East Falls Church Station, Track 2." Train ID 611 responded, "that is a negative; I did not talk to the AMF. When I saw the AMF flagging, I was one door off the platform." The Radio RTC

	responded, "Train ID 611, what is your lead car, over?" Train ID 611 responded, "7078."
12:17:10 hrs.	The Radio RTC responded, "continue on lead car 7078." The RTC then asked the Rail Supervisor, "what is your location?" Rail Supervisor (R/S) responded, "I am at Greensboro Station." The Radio RTC responded, "confirmed, standby at Track 2 and take over train operations of Train ID 611." The R/S acknowledged.
12:17:45 hrs.	The Radio RTC notified the RWIC that there is a train on approach that the AMF was not able to make contact with. Radio RTC then instructed Train ID 611 "to reduce speed to no greater than 35 mph; we have a Mobile Work Crew in that section of track all the way to McLean Station. How do you copy operator on Train ID 611, over?" Train ID 611 responded, "copy, train speed is reduced."
12:18:12 hrs.	The Radio RTC announced over OPS 2 radio, "attention all AMF, you have to remain visible on platforms at the 8-car marker and flag the trains in a timely manner. Attention all Operators once coming onto platforms, please be governed by the AMF and stop your trains."

SPOTS Report

Based on SPOTS event log data download, SAFE came to the following conclusion related to the rail vehicle involved:

- Train ID 611 head arrived at East Falls Church Station at 12:14:38 hrs.
- Train ID 611 tail cleared East Falls Church Station at 12:15:26 hrs.
- The platform side doors were never commanded open.

Closed Circuit Television (CCTV)

Due to the Platform Improvement Project, East Falls Church Station CCTV were inoperative.

Office of Vehicle Program Services (CENV)

CENV personnel performed analysis on the affected consist. The lead car data showed that at 12:14:32 hrs., the horn was activated on approach to East Falls Church Platform Station. At 12:14:33 hrs., Train ID 611, Lead Car 7078 entered East Falls Church Station with a speed of 33.26 mph with the master controller in coast position. At 12:14:42 hrs., the consist was 420 feet into the Station's platform, the master controller was moved to

B5 and the train speed was 31.78 mph. At 12:14:46 hrs., the consist reached the end of the Station's platform with a speed of 20.98 mph, with the master controller in B5. At 12:16:22 hrs., the consist came to a stop 2,919 feet beyond the 8-car marker of East Falls Church Station. At 12:16:25 hrs., the consist began to move again towards McLean Station. At 12:17:02 hrs., the consist horn was activated 417.11 feet after beginning to move and continued doing so up to 11,902.4 feet beyond East Falls Church Station's platform. At 12:18:10 hrs., the consist speed reached 30.91 mph after starting to move from a complete stop and before reaching the Mobile Work Crew. At 12:21:30 hrs., Forward-Facing video showed Lead Car 7078 passed roadway workers at a speed of 15.73 mph, 12,985.39 feet beyond East Falls Church Station platform.

NOTE: Per data evidence from CENV, at no time did the consist come to a complete stop within the limits of the platform. Additionally, the Forward-Facing video showed the AMF in position properly at the 8-car marker on the platform as the consist passed. Below is a snapshot of the Vehicle Monitor System (VMS) at the time of the reported incident.

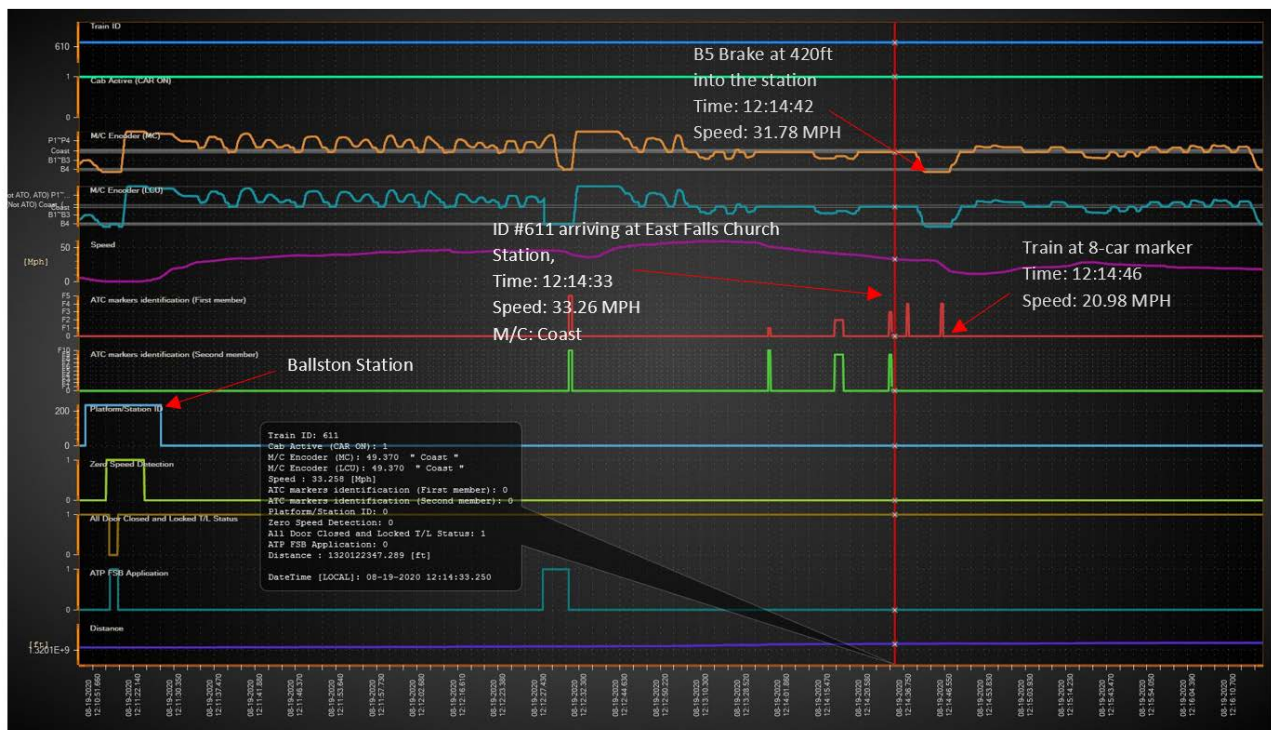


Diagram 1- Event Recorder Graphical Analysis

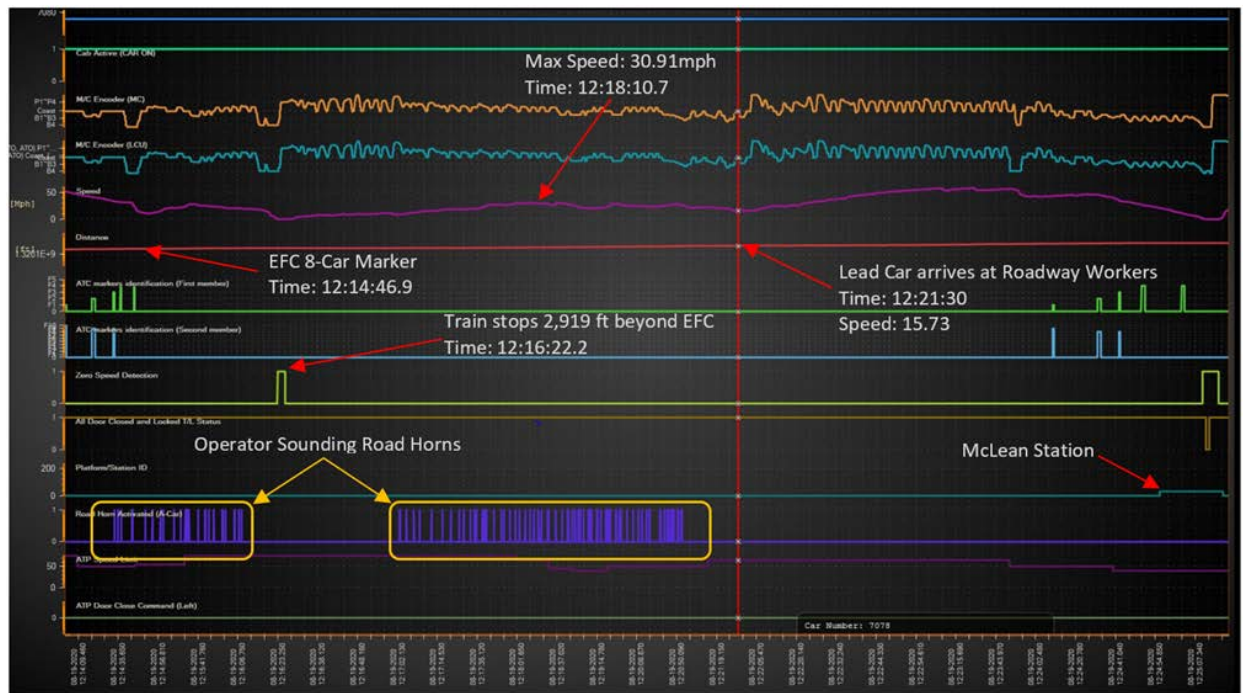
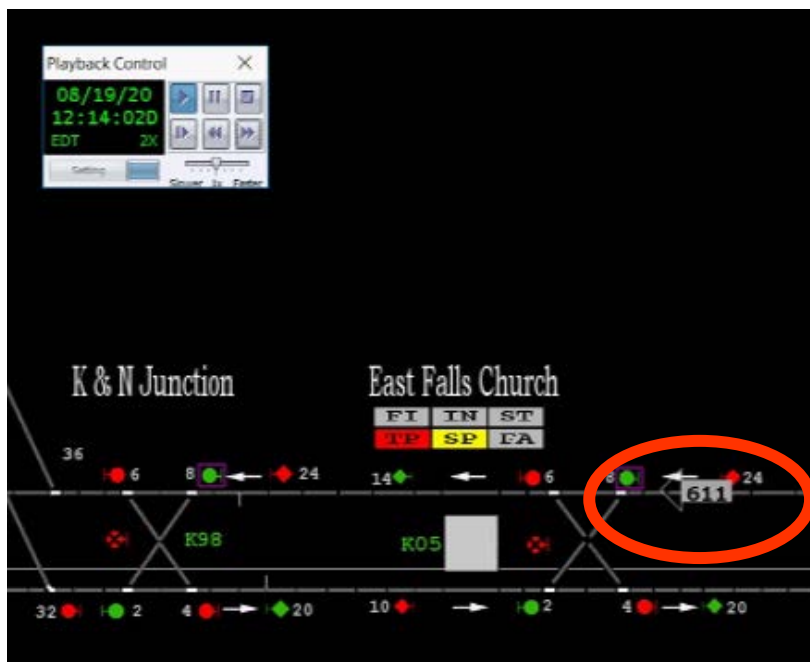


Diagram 2 - Event Recorder Graphical Analysis

Advanced Information Management System Playback

At 12:14:02 hrs., Train ID 611 on approach to East Falls Church Station, Track 2.



At 12:14:32 hrs., Train ID 611 entering East Falls Church, Track 2.



At 12:14:58 hrs., Train ID 611 passed East Falls Church Station, Track 2.



Office of Communications Maintenance (COMM)

COMM performed a comprehensive radio operational test between Ballston-MU Station and East Falls Church Station, Track 2. The test was found to be normal.

NOTE: After reviewing the ARS playback, there did not appear to be any communication deficiencies over the radio.

Interview Findings

Based on the investigation launched into the Improper Roadway Worker Protection violation at East Falls Church Station, Track 2, SAFE conducted three (3) investigative interviews and identified the following key findings associated with this event, as follows:

The RWIC reported that the TRST work crew was performing an inspection from Spring Hill Station to K98 Junction, Track 2. The purpose of the track inspection was to examine rail tracks for flaws that could lead to catastrophic failures.

The AMF reported being in position at East Falls Church Station, Track 2 ahead of the Mobile Work Crew's starting location. The AMF indicated that the Mobile Work Crew was walking against traffic in the direction of the AMF positioned on that respective track. The AMF indicated they confirmed being in position and ready for AMF operations. The AMF reported as the consist entered East Falls Church Station, Track 2 platform, the consist did not come to a complete stop at the platform's 8-car marker to receive verbal face-to-face instructions from the AMF that a Mobile Work Crew was wayside performing a track inspection between Mclean Station and East Falls Church Station. The AMF notified the ROCC via radio and stated, "Emergency, Emergency, Emergency, a train just failed to stop at my location. The AMF stated, the train continued on and the ROCC was able to make contact with the train via radio. The ROCC Radio RTC contacted the Train Operator of Train ID 611 to ascertain what occurred. The Train Operator responded to ROCC Radio RTC and stated, "I assumed the AMF was a construction worker and did not stop." The Mobile Work Crew was instructed to stand in a place of safety and await a train pickup.

RTRA Train Operator operating Train ID 611 stated after passing the AMF, the ROCC asked if contact was made with the AMF. The Train Operator responded, "that's a negative; I was two car doors off the platform." The Train Operator stated the ROCC instructions were to continue and then the Train Operator was taken out of service. The Train Operator stated, "from 10:42 hrs., to 11:17 hrs., I was on my break and never heard the ROCC announce a mobile crew was on the Silver Line near East Falls Church Station." Additionally, the Train Operator stated, the construction cones on the platform were blocking the flashing amber lantern, so the Train Operator did not know an AMF was there. The Train Operator stated, "I did not notify the ROCC when I passed the AMF, I just stopped the consist and the ROCC contacted the Train Operator and instructions were given to the Train Operator to continue on."

Immediate Mitigation to Prevent Recurrence

- The Train Operator was removed from service for post-incident testing.
- The affected consist was removed from service for post-incident inspection.
- The ROCC Radio RTC re-instructed AMF via radio to remain visible on platforms at the 8-car marker and flag the trains in a timely manner.
- The ROCC Radio RTC re-instructed Train Operator's, "attention all operators once coming onto platforms, please be governed by the AMF and stop your trains."
- RTRA developed Lessons Learned Number 2020-004 with an emphasis on Train Operator's executing their job responsibilities and duties outlined in the MSRPH regarding entering the platform limits within approved regulated speeds and performing face-to-face communication processes with the AMF prior to proceeding to the next station.
- RTRA has contacted the training department so that the Train Operator can receive refresher training. Refresher training will be on rules and procedures regarding compliance with the AMF, RWP, and maximum authorized speed of 25 mph when traveling through a station procedure (Train Operator attended a series of classes covering train operations and MSRPH from 09/21/2020 to 10/14/2020).

Findings

- The Train Operator entered East Falls Church platform limits above approved regulated speeds [more than 25 mph] while "dead heading" through East Falls Church Station. This is not in compliance with MSRPH Operating Rule 3.82 *"Employees shall not operate rail vehicles at speeds higher than the maximum authorized speed maximum speed. Maximum speed for trains passing through station without stopping is 25 mph (dead head speed)."*
- The Train Operator traversed through East Falls Church Station while an AMF was present without stopping. This is not in compliance with MSRPH RWP 5.13.6.1 *"As the Rail Vehicle Operator approaches an AMF, all Rail Vehicle Operators MUST come to a COMPLETE STOP at the end of the station platform (eight (8) car marker or end gate area)."* and 5.13.6.2 *"The Rail Vehicle Operator will be given face-to-face verbal instructions regarding working crews on the tracks."*
- Based on the ARS, the AMF reported the RWP violation to the ROCC immediately after Train ID 611 passed the 8-car marker.
- The AMF was positioned properly at the 8-car marker at East Falls Church Station, Track 2 platform with a flashing amber lantern positioned at the 8-car marker and a rolled-up orange warning flag in their hand as the consist passed.

- CMNT performed a post-incident inspection of the railcar and did not identify any operational anomalies with the friction brake or propulsion package that would have contributed to this event. Found Heating Ventilation and Air Conditioning failure and Faulty Line Replaceable Unit notification were observed on the consist Traffic Control Devices.
- CENV analysis on the affected consist showed the speed of the consist entering East Falls Church Station was 33.26 mph. When the consist was 420 feet within the station platform limits, the master controller was moved to the B5 position and the train speed was 31.78 mph. The consist reached the end of the station platform limits with a speed of 20.98 mph, with the master controller in B5. At no time did the consist come to a complete stop within the limits of the platform.
- The ROCC hourly announcement log and daily radio check log from 08/19/20 were provided by the ROCC. Per the ROCC, the hourly announcements are logged only on the hour. Roadway worker updates are announced every 20 minutes but are not included in the log. Additionally, after review of the ROCC Controllers' announcement log there were no supervisor signature on the log from 10:00 hrs., to 13:00 hrs., to confirm that the announcements were conducted.

Weather

At the time of the incident, the temperature was 84° F and clear. SAFE has concluded that weather was not a contributing factor in this incident. (Weather source: NOAA – Location: Arlington, VA.)

Human Factors

Fatigue

Based on SAFE's interview question related to Fatigue Factors and review of all employees' Train Operator, RWIC, AMF, and Mobile Work Crew 30-day work histories, it was determined, employee hours of service were in accordance with WMATA's *Fatigue Risk Management Policy 10.6* and *Hours of Service Limitations for Prevention of Fatigue Policy 10.7* and discounted Fatigue as a contributing factor for this event.

Post-Incident Toxicological Testing

After reviewing the Train Operator post-incident testing results, it was determined that the employee involved was not in violation of the Drug and Alcohol Policy and Testing Program 7.7. 3/5, therefore, being under the influence of a controlled substance has been excluded as a contributing factor.

Probable Cause

The probable cause of the incident was that Metrorail established a certain number of stations would be bypassed long-term due to construction without adequately mitigating risks introduced by such changes and construction, including risks related to the AMF method of Roadway Worker Protection. Train ID 611 entered the platform limits above approved regulated speeds [more than 25 mph] while “dead heading” through East Falls Church Station, subsequently failing to receive AMF face-to-face communication processes outlined in the Metrorail Safety Rules and Procedures Handbook (MSRPH). The Train Operator was not in compliance with their job responsibilities and duties outlined in the MSRPH listed below:

GR 1.46 – Employees shall not permit any other action or condition of mind to divert their attention from the safe and efficient performance of duty.

OR 3.18 – Employees shall not operate any vehicle in a reckless or unsafe manner.

OR 3.71 – Rail Vehicle operators shall stop their vehicles immediately when observing anyone violently waving any object on or near the track.

OR 3.82 - Employees shall not operate rail vehicles at speeds higher than the maximum authorized speed maximum speed for trains passing through the station without stopping is 25 mph (dead head speed).

MSRPH RWP 5.13.6.1 - As the Rail Vehicle Operator approaches an AMF, all Rail Vehicle Operators MUST come to a COMPLETE STOP at the end of the station platform (eight (8) car marker or end gate area. (The TRAIN OPERATOR traversed through East Falls Church Station while an Advance Mobile Flagger was present without stopping)

MSRPH RWP 5.13.6.2 - The Rail Vehicle Operator will be given face-to-face verbal instructions regarding working crews on the tracks.”

Additionally, due to the East Falls Church Platform Improvement Project, CCTV was inoperative and not available. Additionally, environmental conditions of the platform, i.e., construction cones, construction workers with comparable safety vest as the AMF, and poor platform lighting indirectly contributed to this event.

SAFE Recommendations

As a result of this investigation, SAFE makes the following safety recommendations:

For ROCC to develop a Temporary Order for scheduled Platform Improvement Projects where trains must bypass a station, e.g., ROCC will “un-fleet” the signals [remove automatic] associated with AMF duties at a respective 8-car marker location in a construction area. ROCC will then provide the Train Operator a permissive block to the operating signal to receive instructions from the AMF. Once briefed, the ROCC will confirm the AMF communication with Train Operator and provide a lunar signal to the Train Operator to proceed.

For RTRA to enhance On-the-Job Training (OJT) and ride check process and provide the Train Operator with refresher training on performance requirements to identify opportunities for improvements.

For RTRA to develop a Lessons Learned with an emphasis on Train Operator’s executing their job responsibilities and duties outlined in the MSRPH regarding entering the platform limits within approved regulated speeds and performing face-to-face communication processes with the AMF prior to proceeding to the next station.

For RTRA to contact the training department so that the Train Operator can receive refresher training. Refresher training will be on rules and procedures regarding compliance with the AMF, RWP, and maximum authorized speed of 25 mph when traveling through a station procedure.

Appendix A – RTRA Lessons Learned Notice

Attachment 1- RTRA Lessons Learned Notice Number 2020-004



Excessive Deadhead Speed Contributes to AMF Communication Issues

INCIDENT SUMMARY

On August 19, 2020, at approximately 12:16 pm, the Advance Mobile Flag person (AMF) located at East Falls Church, track 2, contacted ROCC to report that train 611 failed to stop and receive instructions, prior to proceeding to the next station as required. ROCC contacted the operator aboard train 611 to verify that the Operator stopped at East Falls Church and spoke with the AMF, prior to proceeding to the next station.

The operator aboard 611 reported that while operating through East Falls Church Station at 25 mph, and blowing the horn, a construction worker was observed on the platform. When the train reached the 20 MPH marker, the operator observed the AMF unfolding his flag. Train 611 reported that they applied the brake (B5) and stopped the train with 2 cars off the platform. Train 611 also reported that the train continued 60 feet before stopping.

Train 611 stated that when the train had stopped, the AMF had already contacted ROCC. ROCC subsequently contacted Train 611 and confirmed the train did not stop at East Falls Church Station to speak with the AMF. The operator of Train 611 was taken out of service. On the date of this incident, East Falls Church Station was closed and undergoing reconstruction activity.

ROOT CAUSES

- Operator of train 611 should have entered East Falls Church Station at 25 mph, while remaining vigilant and prepared to stop if necessary. It was electronically verified that train 611 was traveling in excess of 33 mph.
- Train Operator 611 once stopped should have immediately contacted ROCC and NOT moved the train until receiving further instructions from ROCC.
- An analysis of the video from the lead car in the consist of train 611 shows the AMF in position at the end of the platform waving his orange flag attempting to stop the train to no avail.

LESSONS LEARNED

What happened...	What should have happened...
The operator of Train 611 entered and operated through East Falls Church station in excess of 33 mph.	The operator of Train 611 should have been traveling at a speed no greater than 25 mph, being vigilant and looking out for anything requiring them to react quickly and safely.
The operator of Train 611 failed to immediately contact ROCC upon realizing that the train had passed the AMF without receiving the proper instructions. The AMF contacted ROCC and reported the incident.	The operator of Train 611 should have immediately contacted ROCC upon realizing that they had passed the AMF without receiving the proper instructions.

RECOMMENDATIONS

- ✓ Review of the following MSRP Operating Rules:
 - OR 3.18 Employees shall not operate any vehicle in a reckless or unsafe manner.
 - OR 3.82 Employees shall not operate rail vehicles higher than the maximum authorized speed. Maximum speed for trains passing through station without stopping is 25 mph.
- ✓ Never assume because a station is closed for revenue service that you will not see an AMF at the end of the platform.
- ✓ After overrunning a station immediately stop to report the incident to ROCC and be governed by their instructions.

Appendix B - Interview Summaries

Interview Details

Office of Track and Structure

Scope of Work:

The TRST work crew was performing an inspection from Spring Hill Station to K98 Junction Track 2. The purpose of the track inspection was to examine rail tracks for flaws that could lead to catastrophic failures.

RWIC

The RWIC stated after completing an inspection from Tysons Corner Station to McLean Station; the RWIC notified the ROCC that the Mobile Work Crew was safely aboard the platform. The RWIC stated, "permission was granted to go direct with the AMF to ensure the Advance Mobile Flagger was in position at the next station ahead 8-car marker at East Falls Church Station, track 2, in the direction the Mobile Work Crew would be traveling." The RWIC stated that the AMF stated over the radio, "I am in position with equipment set up properly and I am ready for AMF operations." The RWIC stated, "permission was granted by ROCC Radio RTC for the TRST Mobile Work Crew to enter the roadway to start inspection at McLean Station, Track 2." The RWIC stated the Mobile Work Crew was approximately 10 minutes from finishing up the inspection and then the ROCC Radio RTC contacted the Mobile Work Crew and stated, "stand in a place of safety and wait for a train pick up then landline the ROCC once you get on the platform."

AMF

The AMF signed the RWIC safety briefing form at West Falls Church Yard. The AMF stated the RWIC then instructed the AMF to go to East Falls Church Station on standby and wait to receive instructions from the RWIC. The AMF stated at approximately 11:40 hrs., the RWIC contacted the AMF via radio and asked, are you in position with equipment set up properly and ready for AMF operations? AMF operations stated that "I am at the 8-car marker East Falls Church Station, Track 2 ready for AMF operations." The AMF stated, "I started my flagging duties and once rail vehicles stopped, I provided face-to-face instruction to the train operators via AMF script. At approximately 12:15 hrs., a train approached the 8-car marker and it appeared as if the train was going to stop, but I realized the train was not going to stop and I continued to wave my flag." The AMF stated, "after the train did not stop, I called emergency three times over the radio to inform the ROCC that a train passed my location without stopping." The AMF stated, "the train continued on and the ROCC was able to make contact with the train via radio."

RTRA

Train Operator Interview Statement:

A WMATA employee with two (2) years of experience as a Train Operator and ten (10) years of service in various roles including, Bus Operator. The Train Operator's last certification was on April 13, 2018, and the Train Operator has no history of sleep issues to report.

During post-incident interviews with SAFE, the Train Operator operating Silver Line Train ID 611, stated as "I was entering East Falls Church Station, track 2, I was operating the consist at 25 mph and blowing the horn because the station was closed." Train Operator stated, "as I am operating the consist, I look on the platform and notice construction workers on the platform." The Train Operator stated, "once I got to the last 20-car marker, I saw an individual walking up to the 8-car marker unfolding a flag and waved the flag indicating the Train Operator to stop and I believed it was the AMF." Train Operator stated, "once I stopped the consist, I was two cars off the platform." Train Operator stated, "I thought the AMF was a construction worker and that's why I didn't stop." The Train Operator stated, "before I could contact ROCC regarding the incident, the AMF went over the radio and stated Emergency, Emergency, Emergency."

The Train Operator stated, "at that point, the ROCC asked if contact was made with the AMF," the Train Operator responded, "that's a negative, I was 2 car doors off the platform." The Train Operator stated the ROCC instructions were to continue and then the Train Operator was taken out of service. The Train Operator stated, "from 10:42 hrs., to 11:17 hrs., I was on my break and never heard the ROCC announce a mobile crew was on the Silver Line near East Falls Church Station." Additionally, the Train Operator stated, the construction cones on the platform were blocking the flashing amber lantern, so the Train Operator did not know an AMF was there. The Train Operator stated, "I did not notify the ROCC when I passed the AMF, I just stopped the consist and the ROCC contacted the me and instructed me to continue on." The Train Operator stated, upon seeing the Mobile Work Crew on the roadway, they sound the horn and dimmed the consist lights and did not exceed 15 mph when passing the Mobile work Crew. The Train Operator stated, there were no discrepancies with the consist or on the roadway when